CURRICULUM VITAE
Garth Isaak

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Education:

- Ph.D., Interdisciplinary, from Rutgers Center for Operations Research (RUTCOR), Rutgers University, October 1990.
  Thesis: *Odd Forests, Reversing Numbers, and Discrete Representations of Interval Orders.*
  Thesis Advisor: Fred S. Roberts.
- B.A. Summa Cum Laude, Bethel College (Kansas), 1984.
  majors in Mathematical Sciences, in Physics and in Chemistry.

Academic Positions:

- Associate Professor (with tenure), Department of Mathematics, Lehigh University 1998 – present.
- Assistant Professor, Department of Mathematics, Lehigh University 1993 – 1998.
- Visiting Assistant Professor, Department of Mathematics, Lehigh University 1992 – 1993.
- John Wesley Young Research Instructor, Department of Mathematics and Computer Science, Dartmouth College, 1990 – 1992.
- Instructor, Deans Summer College Program (for gifted high school students), Rutgers University, summers 1989, 1990.
- Teaching Assistant, Departments of Mathematics and Computer Science, Rutgers University, 1985 – 1990.
- Mathematics Instructor, Bethel College (Kansas), 1984 – 1985.
- Science Instructor, Hesston Junior College, 1984 – 1985.

Research Grants:

- Interval Orders and Graphs with Bounds and Tolerances, Office of Naval Research (ONR), 1994 – 1997.
- Reidler Foundation grant, summers 1993, 1997 and 1998.

Research Interests:

- Discrete Applied Mathematics
- Operations Research
- Combinatorial Optimization

Student Advising:

- Current PhD advisor for one student in mathematics: (Darren Narayan).
- Directed undergraduate honors thesis in mathematics, 1996 –1997 (Samuel Donnelly).
- PhD Committee member for four students in Electrical Engineering and Computer Science (EECS): (Ozmun Guizide, Hyung Lee, Kai Ting Shen, Cindy Wang).
- PhD Committee member for one student in Industrial Engineering (IMSE): (Kedar Naphende).

Professional Activities (Lehigh):

- Faculty Development
  - Co-organizer Regional Project Kaleidoscope Conference, Lehigh University, February, 1997.
  - Attended Project Kaleidoscope conference on teaching, Kansas City September 1996.
  - Organized discussion (with R. Barnes) on critical thinking in the classroom for faculty development lunch, March 1994.
  - Attended Lily conference on teaching, Miami University, October 1993 and presented information from conference at Faculty Luncheon.
- Mathematics Club Co-advisor, 1993 – present.
- Freshman Advisor, 1997 – 1998.
- Mathematics majors advisor, 1998 – present.
- Assist in Lehigh Valley High School Mathematics Contest, Marches, 1995 – 1998.
- Putnam and Mathematical Contest in Modeling advisor 1997 – present.
- Member of College of Arts and Sciences task force on the freshman year experience, Spring 1998.
- Departmental planning committee, 1998.
- Chair, College of Arts and Sciences committee to review BA in Computer Science

Professional Activities (External):

- Professional Society Memberships
  - American Mathematical Society (AMS)
  - Fellow of the Institute for Combinatorics and Applications (ICA)
  - Institute for Operations Research and Management Science (INFORMS)
  - Mathematical Association of America (MAA)
  - Society of Industrial and Applied Mathematicians (SIAM)
- Journal Referee - over 50 papers

- *Discrete Mathematics*
- *Discrete Applied Mathematics*
- *Graphs and Combinatorics*
- *Journal of Combinatorics, Information and Systems Science*
- *Journal of Combinatorial Theory, Series A*
- *Journal of Graph Theory*
- *Journal of Mathematical Psychology*
- *Mathematical Social Sciences*
- *Order*
- *SIAM Journal of Discrete mathematics*

- External Examiner for Swarthmore College Honors Program, May 1994 and May 1996.
- Assist in running graph theory workshop for high school teachers at DIMACS center (Rutgers University), July 1998.

Courses Taught:

- Reading Courses at Lehigh
  - Problem solving
  - Undergraduate Combinatorics (three times)
  - Graduate Combinatorics and Graph Theory (three times)
  - Supplement for undergraduate course to graduate level (2 times, 4 students)
  - Combinatorics Graduate Seminar (6 students)
- Regular Courses at Lehigh
  - Introduction to Mathematical Thought (Math 5)
  - Finite Mathematics (Math 9)
  - Basic Statistics (Math 12)
  - Calculus (Math 21, Math 22 three times, Math 75 five times, Math 76 twice)
  - Linear Algebra for Buisness and Economics (Math 61, twice)
  - Linear methods (Math 205, twice)
  - Probability and Statistics (Math 231)
  - Abstract Algebra (Math 243)
  - Linear Algebra (Math 244)
  - Combinatorics (Math 251, three times)
  - Discrete Structures (Math/CSC 261, three times)
  - Probability and its Applications (Math 310)
  - Graduate Combinatorics (Math 446 and 448 three times, with students from mathematics, computer science and industrial engineering)

- Regular Courses prior to Lehigh
  - Combinatorics and Graph Theory (Rutgers three times, Dartmouth once)
  - Design and Analysis of Algorithms (Dartmouth)
  - Fortran (Heston)
  - Linear Algebra (Dartmouth)
  - Linear Programming (Rutgers, Dartmouth twice)
  - Mathematical Modeling (Dartmouth)
  - Precalculus (Bethel)
  - Polyhedral Combinatorics (Dartmouth)
  - Statistics (Bethel)

Addresses:

- Invited Addresses
  - Operations research Society of America (ORSA/INFORMS) national conferences (special sessions), New York, October 1990, Anaheim, November 1991 and Atlanta, November 1996.
  - Advanced Research Institute for Discrete and Applied Mathematics, Rutgers University, June 1991 and June 1992.
  - Combinatorics Seminar, Arizona State University, November 1991.
  - Industrial Engineering Seminar, Lehigh University, October 1993 and November 1996.
  - American Mathematical Society summer meeting, Special session on Algorithms for Graphs and Matroids, Burlington, August 1995.
- Invited Undergraduate Talks
  - Dickinson College, October 1990.
  - Messiah College December 1990 and October 1998.
  - Bethel College (Kansas) January 1993, series of three lectures.
  - Lafayette College (NSF Research experiences for undergraduates program) July 1993.
  - DIMACS, Rutgers University, Discrete Research and Educational Institute (for High School Teachers), July 1998.
- Contributed Addresses
  - Southeastern Conference on Combinatorics, Graph Theory, and Computing, Boca Raton and Baton Rouge, Februaries 1989, 1990, 1991, 1994, 1996.
  - SIAM Discrete Mathematics Conference, Vancouver, June 1994, Baltimore, June 1996 and Toronto, July 1998.
  - ORDAL (Orders and Algorithms), Lyon, France, July 1994.
  - 8th Quadrennial International Conference on Graph Theory, Combinatorial Applications and Algorithms, Kalamazoo, June 1996.

Refereed Research Publications:

1. 'The Weighted Reversing Number of a Digraph,' with B. Tesman, Congressus Numeratium **83** (1991) 115–124.
2. 'A Characterization of Graphs that Ensure the Existence of Stable Matchings,' with H. Abeledo, Math. Social Sciences **22** (1991) 93–96.
3. '2-Competition Graphs,' with S.R. Kim, T.A. McKee, F.R. McMorris, and F.S. Roberts, SIAM Journal on Discrete Math. **5** (1992) 524–538.
4. 'Bounded Discrete Representations of Interval Orders,' Discrete Appl. Math. **44** (1993) 157–183.
5. 'On the de Bruijn Torus Problem,' with G.H. Hurlbert, J. Comb. Theory A **64** (1993) 50–62.
6. 'A Meshing Technique for De Bruijn Tori,' with G.H. Hurlbert, Contemp. Math. **178** (1994) 153–160.
7. 'Scheduling Rooted Forests with Communication Delays,' Order **11** (1994) 309–316.
8. 'The Reversing Number of a Digraph,' with J.P. Barthelemy, O. Hudry, F.S. Roberts, and B. Tesman, Discrete Appl. Math. **60** (1995) 39–76.
9. 'Proper and Unit Tolerance Graphs,' with K.P. Bogart, P.C. Fishburn and L. Langley, Discrete Appl. Math. **60** (1995) 99–117.
10. 'New Constructions for De Bruijn Tori,' with G.H. Hurlbert, Designs, Codes and Cryptography **6** (1995) 47–56.
11. 'Tournaments as Feedback Arc Sets,' Electronic Journal of Combinatorics, **2** (1995) R20, 19pp.
12. 'Scheduling Dyadic Intervals,' with J. Driscoll and D. Healy Jr., Discrete Appl. Math. **63** (1995) 101–116.
13. 'Equivalence Class Universal Cycles for Permutations', with G.H. Hurlbert, Discrete Math. **149** (1996) 123–129.
14. 'On Higher Dimensional Perfect Factors,' with G.H. Hurlbert, Ars Combinatoria **45** (1997), 229–239.
15. 'Proper and Unit Bitolerance Orders,' with K.P. Bogart, Discrete Math., **181** (1998) 37–51.
16. 'Powers of Hamiltonian Paths in Interval Graphs,' J. Graph Theory **27** (1998) 31–38.
17. 'Hamiltonian Powers in Threshold and Arborescent Comparability Graphs,' with S. Donnelly, to appear in Discrete Math.
18. 'Representations of Graphs Modulo n,' with A.B. Evans and D.A. Narayan, submitted.
19. 'Constructions for Higher Dimensional Perfect Multifactors,' preliminary version, to be submitted.